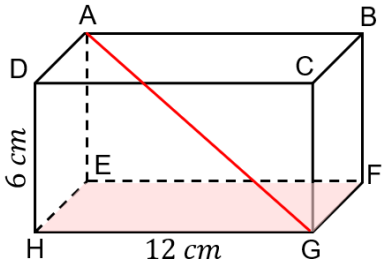
3D Pythagoras and Trigonometry

(a)

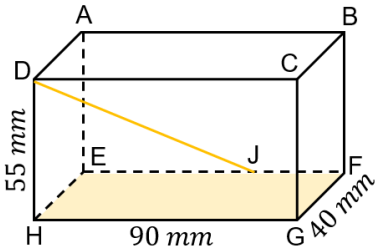
The volume of the cuboid ABCDEFGH is $360\ cm^3$. Find:
(a) the length of AD
(b) the length of AG
(c) the angle between AG and the plane EFGH



(a) $5\ cm$
(b) $14.3\ cm$
(c) $24.8°$

(b)

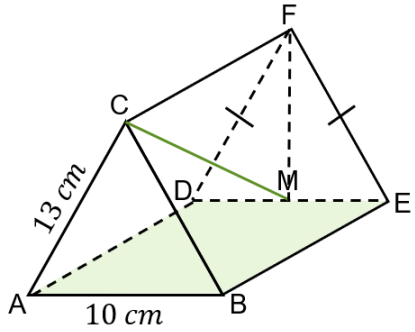
The point J splits the edge EF in the ratio $2:1$. Find:
(a) the length HJ
(b) the length DJ
(c) the angle HDJ
(d) The angle between DJ and the plane EFGH



(a) $72.1\ mm$
(b) $90.7\ mm$
(c) $52.7°$
(d) $37.3°$

(c)

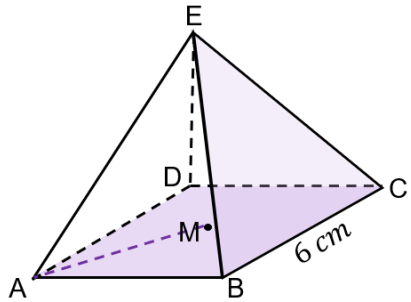
ABCDEF is a triangular prism with a surface area of $660\ cm^2$.
M is the midpoint of DE. Find:
(a) the length of MF
(b) the length of BE
(c) the length of CM
(d) the angle between CM and the plane ABED



(a) $12\ cm$
(b) $15\ cm$
(c) $19.2\ cm$
(d) $38.7°$

(d)

The volume of the square-based pyramid ABCDE is $180\ cm^3$.
M is the centre of the base and is vertically below E. Find:
(a) the height of the pyramid ME
(b) the length of AE
(c) the angle EAM
(d) the angle between the planes BCE and ABCD



(a) $15\ cm$
(b) $15.6\ cm$
(c) $74.2°$
(d) $78.7°$